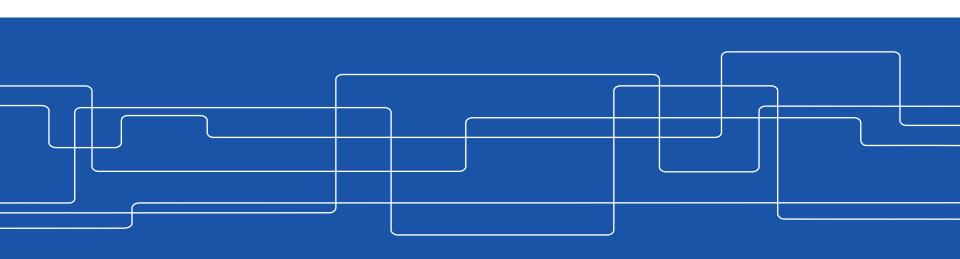


# Radiation simulation

Group B. J. Imbert, Y. Jiao, F. Raiti, A.C. Muresan



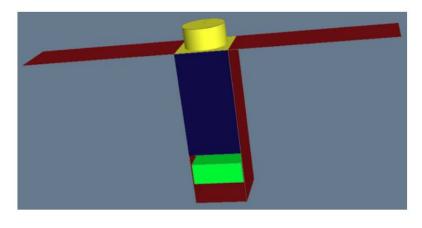


#### Content

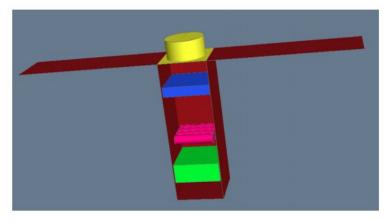
- Introduction
- MIST Model in Systema
- Dose Depth curve
- Subsystems results
- Analysis
- Conclusion



#### **MIST Satellite - Systema**



+Y View



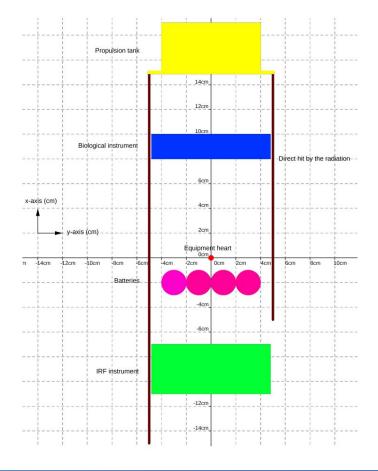
+Y View - hidden wall



#### **MIST Configuration**

MIST includes other components that are not taken into account MIST in Systema:

- NanoProp
- MoreBac
- ISIS iOBC
- GomSpace BP4
- IRF Ratex-J





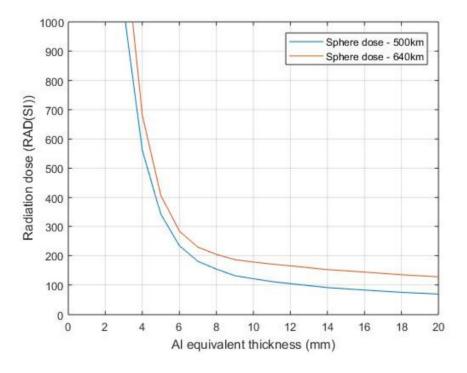
#### **Subsystems description**

Component	Dimensions	Thickness	Material
Propulsion experiment tank	Cylinder with 8 cm diameter and	0.0015 m	TA6V
	0.04 m height, with disc on top of		
	it and a plate of $0.1 \times 0.1 \text{ m}^2$ at the		
	bottom		
Biological experiment tank	Box of $0.02 \times 0.096 \times 0.096 \text{ m}^3$	0.002 m	Aluminum 2024
Equipment heart	Sphere with 4 mm diameter	0.001 m	Density: $4832 \text{ kg} \cdot \text{m}^{-3}$
Batteries	4 cylinders with 0.02 m diameter	0.006	Aluminum 7075
	and height of 0.08 m		
IRF experiment	Box of $0.04 \times 0.096 \times 0.096 \text{ m}^3$	0.002 m	Aluminum 2024
Solar array (wings)			



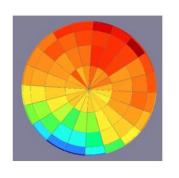
#### Radiation equivalent thickness

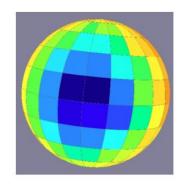
Radiation dose taken in the Sun Synchronous Orbit.
Radiation increases with altitude.

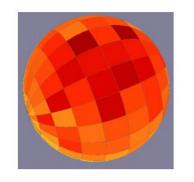




# Computer at 640 km



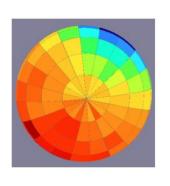


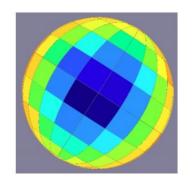


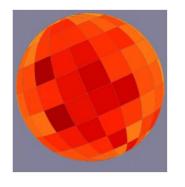
se - SLANT chnique - Solid here (rad(Sl)) 175, 228759022	172.215995088	169,203231155	166.190467221	163.177703288	160.164939354	157, 152 175421	154, 139411488	151.126647554
8 14 15								



# Computer at 500km



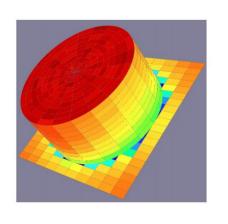


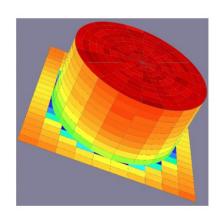


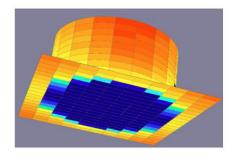
e - SLANT inique - Solid sre (rad(S)) (22,099700346	18.841625774	115,583551202	112,325476631	109.067402059	05.809327487	02,551252916	9.2931783438	6.0351037721
Dose tredired			-	-	-		0	



#### **Propulsion tank at 640km**



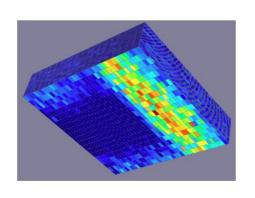


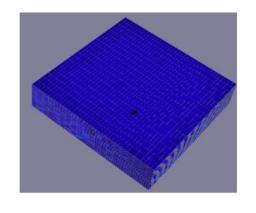


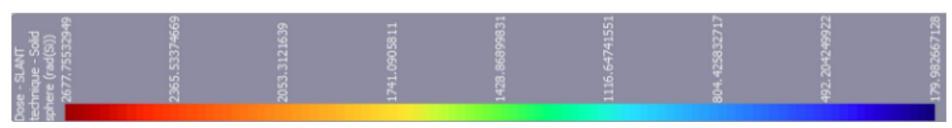
e - SLANT mique - Solid ere (rad(S)) 138497, 44587	383760.479733	329023.513596	274286.547459	219549,581322	164812.615185	110075.649048	55338.6829108	501.716773717
\$ 1 £			·					



# Biological experiment at 640km

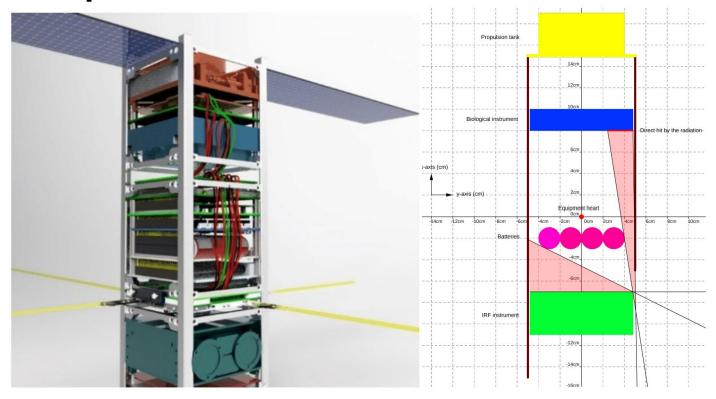






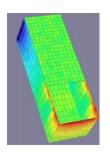


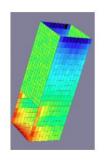
#### **Explanation of the radiation band**





#### **Exterior walls at 640km**

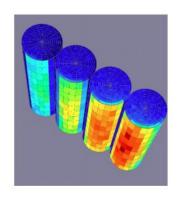


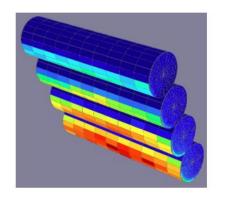


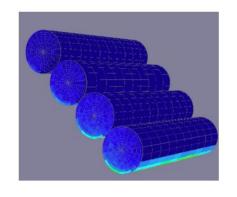




#### **Batteries at 640km**



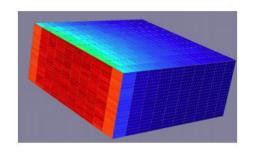


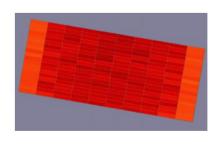


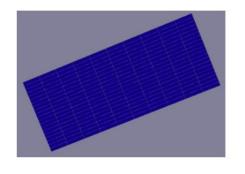
<b>₹</b>	61	32	2	37		22	21	71
■ ○ 日	34	29		\$	유	Š	15	27
F 8 2 8	20	8	6	2	8	9	8	17
A 1 8 8		<b>9</b>	4.			4	8	\$
S 2 2 2	ģ	Ž	ig.	ĕ	270	2	gé	
6 E E E	8	31	52	8	2	9	25	9
225								



# IRF experiment at 640km



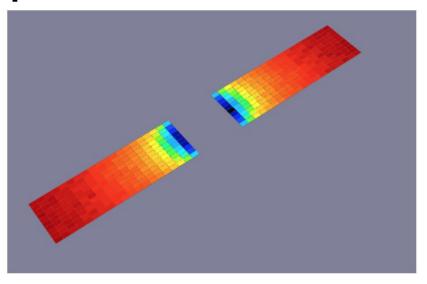


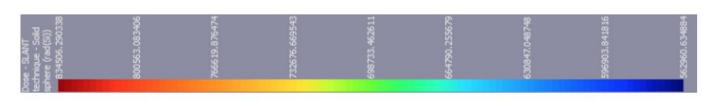


Dose - SLANT technique - Solid sphere (rad(S)) 420144, 586938 367661.009203	262693.853733	157726,698263	105243, 120528 52759, 5427927 275, 965057647
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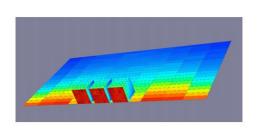
# Solar panels at 640km

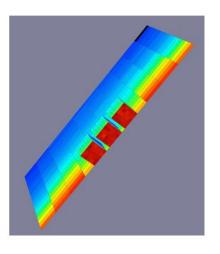


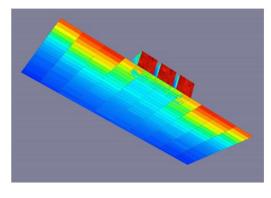




# **Additional CUBES Experiments**











# Thank you very much!

Question?